

WHAT IS CLAIMED IS:

1. An electrically-driven steering lock device comprising:

a lock body having a main body portion in which a drive source is accommodated, and a guide portion which is tubular and which projects from the main body portion toward a steering shaft of a vehicle;

a connecting portion enabling the lock body to divide when impact of a predetermined value or more is applied to the lock body;

a lock stopper moving due to driving force from the drive source;

a lock bar which is provided so as to be integrally movable with the lock stopper within the guide portion and whose proximal end portion is connected to the lock stopper, and in a state in which the lock stopper has been moved toward a guide portion side of the lock body, a distal end portion of the lock bar projects toward the steering shaft from a distal end of the guide portion and locks the steering shaft, and in a state in which the lock stopper has been moved toward a main body portion side of the lock body, the distal end portion of the lock bar moves in a direction opposite to the steering shaft and releases locking of the steering shaft;

a lock plate having a through-hole, and provided between the guide portion and the lock stopper so as to be movable toward the

main body portion, and urged by an urging means toward the main body portion side, and at usual times, movement of the lock plate toward the main body portion side is impeded due to the lock plate abutting the main body portion;

a lock pin provided at the guide portion so as to be movable in a direction intersecting a direction of movement of the lock stopper, and urged toward the lock stopper by an urging means, movement of the lock pin toward the lock stopper being impeded due to the lock pin abutting an edge of the through-hole of the lock plate; and

a fit-in concave portion formed at a position of the lock stopper which position faces the lock pin across the lock plate in a state in which the lock stopper has been moved toward the guide portion side of the lock body, the lock pin being able to fit in the fit-in concave portion.

2. The electrically-driven steering lock device of claim 1, wherein the lock plate and the urging means for urging the lock plate, and the lock pin and the urging means for urging the lock pin, are provided at the interior of the guide portion in a state of not being exposed.

3. The electrically-driven steering lock device of claim 1, wherein the lock stopper has another fit-in concave portion formed at a position of the lock stopper which position faces the lock

pin across the lock plate when the lock stopper has been moved toward the main body portion side of the lock body, and the lock pin can fit in the other fit-in concave portion.

4. The electrically-driven steering lock device of claim 1, further comprising a brittle portion provided at a position of the lock stopper corresponding to the connecting portion, the brittle portion enabling the lock stopper itself to divide at a time when the lock body divides.

5. The electrically-driven steering lock device of claim 1, wherein the lock plate is structured so as to be divided into a fixed plate which is fixed to the main body portion, and a movable plate which has the through-hole in a central portion thereof, and which is provided so as to be movable toward the fixed plate between an inner wall of the guide portion and the lock stopper, and which is urged toward the fixed plate by the urging means, and

movement of the movable plate toward the fixed plate is impeded due to an edge of the movable plate engaging with an edge of the fixed plate at a position corresponding to the connecting portion of the lock body.

6. The electrically-driven steering lock device of claim 5, wherein, in a state in which the lock stopper has been moved toward

the guide portion side of the lock body, when impact of a predetermined value or more is applied to the lock body and the connecting portion breaks, the lock body is divided and engagement of the edge of the fixed plate and the movable plate is cancelled, and the movable plate thereby moves toward the fixed plate, and abutment of the lock pin and the edge of the through-hole of the movable plate is thereby cancelled, and the lock pin fits into the fit-in concave portion.

7. The electrically-driven steering lock device of claim 3, wherein the lock plate is structured so as to be divided into a fixed plate which is fixed to the main body portion, and a movable plate which has the through-hole in a central portion thereof, and which is provided so as to be movable toward the fixed plate between an inner wall of the guide portion and the lock stopper, and which is urged toward the fixed plate by the urging means, and

movement of the movable plate toward the fixed plate is impeded due to an edge of the movable plate engaging with an edge of the fixed plate at a position corresponding to the connecting portion of the lock body.

8. The electrically-driven steering lock device of claim 7, wherein, in a state in which the lock stopper has been moved toward a main body portion side of the lock body, when impact of a

predetermined value or more is applied to the lock body and the connecting portion breaks, the lock body divides and engagement of the edge of the fixed plate and the movable plate is cancelled, and the movable plate thereby moves toward the fixed plate, and abutment of the lock pin and the edge of the through-hole of the movable plate is thereby cancelled, and the lock pin fits into the other fit-in concave portion.

9. The electrically-driven steering lock device of claim 4, wherein the fit-in concave portion is positioned at the lock stopper further toward the steering shaft than the brittle portion is.

10. The electrically-driven steering lock device of claim 9, wherein the lock stopper has a shielding portion which is provided between the brittle portion and the fit-in concave portion, and whose outer diameter is slightly smaller than a diameter of the guide portion in a vicinity of the shielding portion.

11. The electrically-driven steering lock device of claim 3, further comprising a brittle portion provided at a position of the lock stopper corresponding to the connecting portion, the brittle portion enabling the lock stopper itself to divide at a time when the lock body divides.

12. The electrically-driven steering lock device of claim 11, wherein the other fit-in concave portion is positioned at the lock stopper further toward the steering shaft than the brittle portion and the fit-in concave portion are.

13. The electrically-driven steering lock device of claim 1, wherein a connecting portion, which connects a proximal end portion of the lock bar and the lock stopper, is able to extend and contract along the guide portion.

14. An electrically-driven steering lock device comprising:

    a lock body having a main body portion in which a drive source is accommodated, and a guide portion which is tubular and which projects from the main body portion toward a steering shaft of a vehicle;

    a connecting portion enabling the lock body to divide when impact of a predetermined value or more is applied to the lock body; and

    a lock stopper moving in a state of extending over the main body portion and the guide portion, due to driving force from the drive source, the lock stopper including a first fit-in concave portion formed at a position of the lock stopper further toward the steering shaft than a position substantially corresponding to the connecting portion;

    a lock bar which is provided so as to be integrally movable

with the lock stopper within the guide portion, and in a state in which the lock stopper has been moved toward a guide portion side of the lock body, a distal end portion of the lock bar projects toward the steering shaft from a distal end of the guide portion and locks the steering shaft, and in a state in which the lock stopper has been moved toward a main body portion side of the lock body, the distal end portion of the lock bar moves in a direction opposite to the steering shaft and releases locking of the steering shaft;

a lock plate having a through-hole, and provided between the guide portion and the lock stopper so as to be movable toward the main body portion, and urged by an urging means toward the main body portion side, and at usual times, movement of the lock plate toward the main body portion side is impeded due to the lock plate abutting the main body portion; and

a lock pin provided at the guide portion so as to be movable in a direction intersecting a direction of movement of the lock stopper, and urged toward the lock stopper by an urging means,

wherein the first fit-in concave portion is formed, such that the lock pin can fit therein, at a position of the lock stopper which position faces the lock pin across the lock plate in a state in which the lock stopper has been moved toward the guide portion side of the lock body,

in the state in which the lock stopper has been moved toward the guide portion side of the lock body, the lock pin abuts an

edge of the through-hole of the lock plate, and movement of the lock pin toward the lock stopper is thereby impeded, and

when impact of a predetermined value or more is applied to the lock body and the connecting portion breaks, the lock body is divided and impeding of movement of the lock plate toward the main body portion side is cancelled and the lock plate moves toward the main body portion side, and abutment of the lock pin and the edge of the through-hole of the lock plate is thereby cancelled, and the lock pin fits into the first fit-in concave portion.

15. The electrically-driven steering lock device of claim 14, wherein the lock stopper further includes a second fit-in concave portion formed further toward a steering shaft side of the lock stopper than the first fit-in concave portion is.

16. The electrically-driven steering lock device of claim 15, wherein the second fit-in concave portion is formed, such that the lock pin can fit therein, at a position of the lock stopper which position faces the lock pin across the lock plate in a state in which the lock stopper has been moved toward the main body portion side of the lock body,

in the state in which the lock stopper has been moved toward the main body portion side of the lock body, the lock pin abuts the edge of the through-hole of the lock plate, and movement of the lock pin toward the lock stopper is thereby impeded, and



when impact of a predetermined value or more is applied to the lock body and the connecting portion breaks, the lock body is divided and impeding of movement of the lock plate toward the main body portion side is cancelled and the lock plate moves toward the main body portion side, and abutment of the lock pin and the edge of the through-hole of the lock plate is thereby cancelled, and the lock pin fits into the second fit-in concave portion.

17. The electrically-driven steering lock device of claim 14, wherein the lock plate and the urging means for urging the lock plate, and the lock pin and the urging means for urging the lock pin, are provided at the interior of the guide portion in a state of not being exposed.

18. The electrically-driven steering lock device of claim 14, wherein the lock plate is structured so as to be divided into a fixed plate which is fixed to the main body portion, and a movable plate which has the through-hole in a central portion thereof, and which is provided so as to be movable toward the fixed plate between an inner wall of the guide portion and the lock stopper, and which is urged toward the fixed plate by the urging means, and

movement of the movable plate toward the fixed plate is impeded due to an edge of the movable plate engaging with an edge of the fixed plate at a position corresponding to the connecting

portion of the lock body.

19. The electrically-driven steering lock device of claim 14, wherein the lock stopper has a shielding portion which is provided between the first fit-in concave portion and a position of the lock stopper substantially corresponding to the connecting portion, and whose outer diameter is slightly smaller than a diameter of the guide portion in a vicinity of the shielding portion.

20. The electrically-driven steering lock device of claim 14, wherein a connecting portion, which connects the lock bar and the lock stopper, is able to extend and contract along the guide portion.